

I CLAIM:

1. An apparatus for irradiating an object with ultraviolet radiation comprising:
 - (a) a housing having a top wall and an internal chamber;
 - (b) a source of ultraviolet radiation disposed within said chamber for emitting ultraviolet light at a first wavelength;
 - (c) an ultraviolet radiation transmitting, light blocking element carried by said top wall of said housing;
 - (d) a first phosphor plate fixedly mounted within said housing between said source of ultraviolet radiation and said ultraviolet radiation transmitting, light blocking element for converting short wave ultraviolet radiation to midrange ultraviolet radiation
 - (e) a short wave ultraviolet filter superimposed over said first phosphor plate for transmitting short wave ultraviolet radiation and for blocking ambient white light;
 - (f) a second phosphor plate removably carried by said housing between said short wave ultraviolet filter and said ultraviolet radiation transmitting, light blocking element for blocking ambient white light; and
 - (g) a long wave ultraviolet filter superimposed over said second phosphor plate for transmitting long wave ultraviolet radiation.

2. The apparatus as defined in claim 1 in which said source of ultraviolet radiation emits radiation at a wave length of about 254 nanometers and in which said ultraviolet radiation transmitting, light blocking element transmits radiation at a wavelength of at least approximately 312 nanometers.

3. The apparatus as defined in claim 1 in which said source of ultraviolet radiation emits radiation at a wave length of about 254 nanometers and in which said first phosphor plate converts the 254 nanometers radiation to approximately 312 nanometers radiation.

4. The apparatus as defined in claim 1 in which said short wave ultraviolet filter transmits ultraviolet radiation at wavelengths of about 254, 312 and 365 nanometers.

5. The apparatus as defined in claim 1 in which said long wave ultraviolet filter transmits ultraviolet radiation at a wavelength of only about 365 nanometers.

6. An apparatus for irradiating an object with ultraviolet radiation comprising:

- (a) a housing having a top wall and an internal chamber;
- (b) a source of ultraviolet radiation disposed within said chamber for emitting ultraviolet light at a first wavelength;
- (c) an ultraviolet radiation transmitting, light blocking element

carried by said top wall of said housing;

(d) an assemblage removably mounted upon said ultraviolet radiation transmitting, light blocking element for converting ultraviolet radiation at a first wavelength to ultraviolet radiation at a second wavelength;

(e) a phosphor plate fixedly mounted within said housing between said assemblage and said ultraviolet radiation transmitting, light block element for converting ultraviolet radiation at a first wavelength to ultraviolet radiation at a second wavelength; and

(f) a filter disposed between said phosphor plate and said ultraviolet radiation transmitting, light blocking element for filtering selected wavelengths of ultraviolet radiation.

7. The apparatus as defined in claim 6 in which said assemblage comprises a glass plate and a phosphor coating affixed to said glass plate for converting ultraviolet radiation at a first wavelength to ultraviolet radiation at a second wavelength.

8. The apparatus as defined in claim 1 in which said glass plate has first and second surfaces and in which said coating is affixed to said second surface.

9. An apparatus for irradiating an object with ultraviolet radiation comprising:

- (a) a housing having a top wall and an internal chamber;
- (b) a source of ultraviolet radiation disposed within said chamber for emitting ultraviolet light at a first wavelength;
- (c) an ultraviolet radiation transmitting, light blocking element carried by said top wall of said housing;
- (d) a plate fixedly mounted within said housing between said source of ultraviolet radiation and said ultraviolet radiation transmitting, light blocking element, said plate having a coating comprising a mixture of phosphors for converting short wave ultraviolet radiation to broadband ultraviolet radiation; and
- (e) a filter removably mounted within said housing between said plate and said ultraviolet radiation transmitting, light blocking element for blocking passage of all but ultraviolet radiation at a wavelength of about 365 nanometers.

10. An apparatus as defined in claim 9 in which said source of ultraviolet radiation emits radiation at a wave length of about 254 nanometers and in which said mixture of phosphors converts 254 nanometers radiation to ultraviolet radiation at a wavelength of between about 312 nanometers radiation and about 312 nanometers radiation.

11. The apparatus as defined in claim 1 in which said long wave ultraviolet filter transmits ultraviolet radiation at a wavelength of only about 365 nanometers.

12. An apparatus for irradiating an object with ultraviolet radiation comprising:

- (a) a housing having a top portion and a bottom portion, said top portion being removably connected to said bottom portion, said housing having an internal chamber;
- (b) a source of ultraviolet radiation disposed within said internal chamber for emitting white light and ultraviolet light at a first wavelength ;
- (c) an ultraviolet radiation transmitting, light blocking element carried by said top portion of said housing;
- (d) an ultraviolet filter superimposed over said ultraviolet radiation transmitting, light blocking element for transmitting ultraviolet radiation at a wavelength of only about 365 nanometers;
- (e) a phosphor plate fixedly mounted within said housing between said source of ultraviolet radiation and said ultraviolet radiation transmitting, light blocking element for converting short wave ultraviolet radiation to midrange ultraviolet radiation;

(f) filter means superimposed over said phosphor plate for filtering white light from the radiation emitted from said source of ultraviolet radiation and for transmitting ultraviolet radiation at wavelengths of about 245, 312 and 365 nanometers.

13. The apparatus as defined in claim 11 in which said phosphor plate converts ultraviolet radiation at a wavelength of about 254 nanometers to ultraviolet radiation at a wavelength of about 312 nanometers.

14. The apparatus as defined in claim 11 in which said ultraviolet radiation transmitting, light blocking element comprises borosilicate glass

15. The apparatus as defined in claim 11 in which said phosphor plate includes at least one grooved surface.

16. An apparatus for irradiating an object with ultraviolet radiation comprising:

- (a) a housing having a top wall and an internal chamber;
- (b) a source of ultraviolet radiation disposed within said chamber for emitting ultraviolet light at a first wavelength;
- (c) an ultraviolet radiation transmitting, light blocking element carried by said top wall of said housing;
- (d) a filter removably mounted within said housing;
- (e) a glass plate fixedly mounted within said housing between said

filter and said ultraviolet radiation transmitting, light block element; and

(f) conversion means for converting ultraviolet radiation at a first wavelength to ultraviolet radiation at a second wavelength, said conversion assembly comprising a supporting frame and a phosphor coated mesh substrate supported by said frame.

17. The apparatus as defined in claim 16 in which said mesh substrate is constructed from metal.

18. The apparatus as defined in claim 16 in which said mesh substrate is constructed from plastic.

19. The apparatus as defined in claim 16 in which said mesh substrate is constructed from glass.

20. The apparatus as defined in claim 16 in which said mesh substrate is constructed from quartz.

21. A conversion means for converting ultraviolet radiation at a first wavelength to ultraviolet radiation at a second wavelength, said conversion means comprising:

(a) a mesh substrate comprising a multiplicity of spaced apart elements, said elements being at least partially coated with a phosphor; and

(b) supporting means for supporting said mesh substrate.

22. The conversion means as defined in claim 21 in which said elements comprise metal.

23. The conversion means as defined in claim 21 in which said elements comprise plastic.

24. The conversion means as defined in claim 21 in which said elements comprise glass.

25. The conversion means as defined in claim 21 in which said elements comprise quartz.

26. The conversion means as defined in claim 21 in which said supporting means comprises a supporting frame

27. The conversion means as defined in claim 21 in which said phosphor comprises a wave shift phosphor that will convert 254nm ultraviolet radiation to 302nm ultraviolet radiation.

28. The conversion means as defined in claim 21 in which said phosphor comprises a waveshift phosphor that will convert 254nm ultraviolet radiation to 365nm ultraviolet radiation.

29. The conversion means as defined in claim 21 in which said phosphor comprises a waveshift phosphor that will convert 254nm ultraviolet radiation to both 302nm and 365nm ultraviolet radiation.

30. The conversion means as defined in Claim 21 in which said phosphor comprises a mixture of visible conversion spectra phosphors and ultraviolet phosphors.